elimination of the dissolved soluble component with ensuing provision of empty spaces which form microcavities and macrocavities.

The dissolution of the soluble component is determined by water or liquids of various types or by biological fluids.

The method, in a further version, comprises a step of adding radiopaque materials—for example barium sulphate and/or other known radiopaque materials—to the biomaterial according to the present invention.

The method, in a version of an embodiment, comprising a step of adding chemical active ingredients, possibly with drug function, to the biomaterial.

This addition step, in the step of an embodiment, comprises a step of introducing the active ingredients in solid powder form to be added to the component in powder form before mixing with the liquid component, for providing a biomaterial in fluid form.

In a further embodiment step, this addition step comprises a step of introducing said active ingredients in aqueous solution state to be mixed with the preformed biomaterial due to the porous nature and capacity thereof to absorb liquids through capillarity.

In an embodiment of the method for obtaining the biomaterial according to the present invention, there is comprised a step of extruding the biomaterial through extrusion means of the known type, such as for example a syringe, and subsequent solidifying of the biomaterial which assumes, in such a manner, the characteristics of a structural matrix with the desired support capacity.

In an alternative embodiment, the method according to the invention comprises a step of obtaining a preform through thermal solidification or thermal sintering of the biomaterial so as to obtain a compact biocompatible composite material having a preformed shape.

Such preformed shape can be a cube, a plate or any other shape useable for replacing the damaged bone tissue or for the introduction of the same into a bone lacuna.

Such method can further comprise a step of resizing the biomaterial of preformed shape through the common instruments used in orthopaedics.

Such steps can also be present at an order different from the one indicated above and they can be present, contingently, wholly or partly, with respect to the various embodiments described above.

The invention claimed is:

1. A composite biocompatible biomaterial, useable as a drug delivery system, a spacer or a bone substitute, comprising:

a structural matrix component comprising polymethyl methacrylate, and a soluble component comprising tricalcium phosphate, wherein said tricalcium phosphate comprises both powder and granules, wherein the structural matrix component includes canaliculi having a dimension of smaller than 100 microns and partially housing the soluble component,

and wherein the structural matrix component and the soluble component comprises a moisture content between 1 and 50% w/w,

wherein said tricalcium phosphate powder has a dimension smaller than 100 microns, and wherein said tricalcium phosphate powder dissolves when contacted with a liquid to form empty spaces which constitute a porosity formed by microcavities with dimensions smaller than 100 microns, and

wherein said tricalcium phosphate granules have dimensions between 200 and 500 microns and wherein said tricalcium phosphate granules dissolve when contacted with a liquid to form empty spaces which constitute a porosity formed by macrocavities with dimensions between 200 and 500 microns, to impart mechanical support characteristics and osteoinductive and osteoconductive characteristics in the entire volume occupied by said biomaterial.

2. The biomaterial according to claim **1**, wherein said structural matrix component further comprises one or more components selected from the group comprising: polymeric components, pure metal components, alloys and ceramic components.

3. The biomaterial according to claim **1**, wherein said soluble component further comprises at least one of a calcium bioceramic inorganic material, inorganic salts provided with solubility and biocompatibility, or soluble organic substances.

4. The biomaterial according to claim **1**, wherein said macrocavities are spherical-shaped.

5. The biomaterial according to claim **1**, wherein said biomaterial further comprises radiopaque materials, comprising barium sulphate and/or other radiopaque materials.

6. The biomaterial according to claim **1**, wherein said structural matrix component is in fluid or solid form.

7. The biomaterial according to claim **6**, wherein said biomaterial comprising said structural matrix component in fluid form is injectable.

8. The biomaterial according to claim **6**, wherein said biomaterial comprising said structural matrix component in solid form has a preformed shape.

9. A method for obtaining a biocompatible composite material, usable as a drug delivery system, a spacer or bone substitute, comprising the following steps:

providing a structural matrix component comprising polymethyl methacrylate;

providing a soluble component comprising both tricalcium phosphate powder and granules;

wherein said step of providing said soluble component comprises

providing tricalcium phosphate powder with a dimension smaller than 100 microns and providing tricalcium phosphate granules with dimensions between 200 and 500 microns;

mixing said polymethyl methacrylate and said tricalcium phosphate;

dissolving said tricalcium phosphate to form empty spaces which constitute a porosity formed by microcavities with a dimension smaller than 100 microns and

empty spaces which constitute a porosity formed by macrocavities with dimensions between 200 and 500 microns, so as to have mechanical support characteristics and osteoinductive and osteoconductive characteristics in the entire volume occupied by said biomaterial;

wherein the structural matrix component includes canaliculi having a dimension of smaller than 100 microns and partially housing the soluble component, and wherein the structural matrix component and the soluble component comprises a moisture content between 1 and 50% w/w.

10. The method according to claim **9**, wherein said step of providing said structural matrix component further comprises providing one or more components selected from the group comprising: polymeric components, pure metal components, alloys, and ceramic components.

11. The method according to claim **9**, wherein said soluble component in the form of powder and granules further at least